DUAL PISTON ENGINE RIGID

ROCKER MARRIAGE

FIELD OF INVENTION

DUAL PISTON INTERNAL COMBUSTION ENGINE

BACK GROUND OF THE INVENTION

United States patent 6,250,263 will reference at least four categories of the original invention where by this dual piston concept utilizes three crank shafts.

1. Page 2 of 13, paragraph 1, subparagraph which reads "at least two cylinders, each said cylinder having separate crank ends, separate face ends, and separate central axis."
2. Page 3 of 13, paragraph 11, subparagraph which reads "at least two cylinders, each said cylinder having separate crank ends, separate face ends, and separate central axis.
3. Page 4 of 13, paragraph 14, subparagraph which reads "at least two cylinders, each cylinder having a crank end, and a face end."

4. Page 4 of 13, paragraph 19, subparagraph which reads "at least two cylinders, each said cylinder having separate crank ends, separate face ends and separate central axis.

By eliminating the two crank shafts on either side on engine which links the piston rods to the main output crankshaft, and installing the rigid rocker concept the following advantages would be achieved:

a. reduction of weight

b. less moving parts

c. reduction of friction and heat

d. reduction of maintenance

e. ease of maintenance

f. reduction of cost

g. increase engine reliability

Engine crank shafts are constructed of solid steel, very heavy; takes time and are expensive to construct, and must be fitted with bushings and bearings. The dual piston face to face engine in reference requires three crank shafts to operate, two crank shafts on either side of engine are for connecting the engine energy to the main crankshaft output. The rigid rocker concept does the same by eliminating the two crankshafts on both sides of engine and installing the rigid rockers the same will be achieved at a more efficient rate. However, the

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rigid rockers on both sides of engine do not rotate 360°, they rock too and fro causing the main crank to rotate 360°.

BRIEF SUMMARY OF THE INVENTION

The dual piston concept, utilizing the rigid rockers can be constructed much lighter and smaller, do the same amount of work, uses less fuel, and have longer life. Rigid rockers will significantly reduce the cost, increase performance, and reduce the weight of a dual piston engine. This engine concept may operate using any fuel, Liquefied Natural Gas (LNG) diesel, gasoline, or kerosene.

DETAILED DESCRIPTION OF THE INVENTION

1. In fig 1: Dual pistons (1) and (2) move outward on its combustion cycle, forcing rigid rockers 7 and 8 away from each other at points (3) and (4). Points (9) and (10) are forced towards each other, causing a clock wise rotating action of points (11) and (12) this energy is transferred to output shaft (13).

2. In fig 1a: Assuming that the rigid rockers are anchored at their exact center axis "0°", the rigid rockers on the piston side will travel 45° away from center axis in one direction and 45° in other. The same will occur on the crankshaft side. Thus, the crankshaft will rotate 360° on its axis. Points (5) and (6) are approximate center support axis for the rigid rockers 7 and 8. Points (5) and (6) will be located off center to compensate for the circumference of points (11) and (12) around (13).
3. By the rocker 7 and 8 actuating too and fro approximately 45° in each direction and do not travel 360° from their axis (5) and (6) the piston rods wag less on their axis (1), (2), (3) and (4) in a complete 4 cycle revolution compared to a 360° cycle of a conventional engine. The "dual face to face rigid rocker marriage concept" will enable the construction of piston rods and pistons to be much lighter in weight, allowing for higher RPM'S.
4. The connecting links (9) and (10) may be constructed more rigidly to the crankshaft since piston rods (3) and (4) won't be directly associated to the output crank.
5. The rigid rockers 7 and 8 may be constructed more ecconomically than a crankshaft, and will certainly last longer, since there won't be a 360° cycle. These rockers will cycle about 45° too and fro on their axis (5)

and (6), 4 strokes to complete 4 cycles of the engine operation (intake-compression-combustion, and exhaust).

In figure 2:

21 is replaceable bushings

22 is replaceable hinge pin which hinges rigid rocker on its center axis.

23 is replaceable hinge pin which connects connecting rod from rigid rocker to main output crankshaft.

24 is replaceable hinge pin which connects piston rod from rigid rocker to piston.